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Team
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Smart garbage route optimization

Abstract:
AI-powered smart routing uses
GPS and traffic data to optimize garbage
collection, saving fuel, time, and cost.

Problem: Garbage trucks waste extra fuel and time due to poorly planned routes.

Approach: Use AI with GPS and real-time traffic data to find the shortest and fastest path.

Expected Outcome: Efficient waste collection, reduced fuel cost, less traffic congestion, and eco-friendly operations.

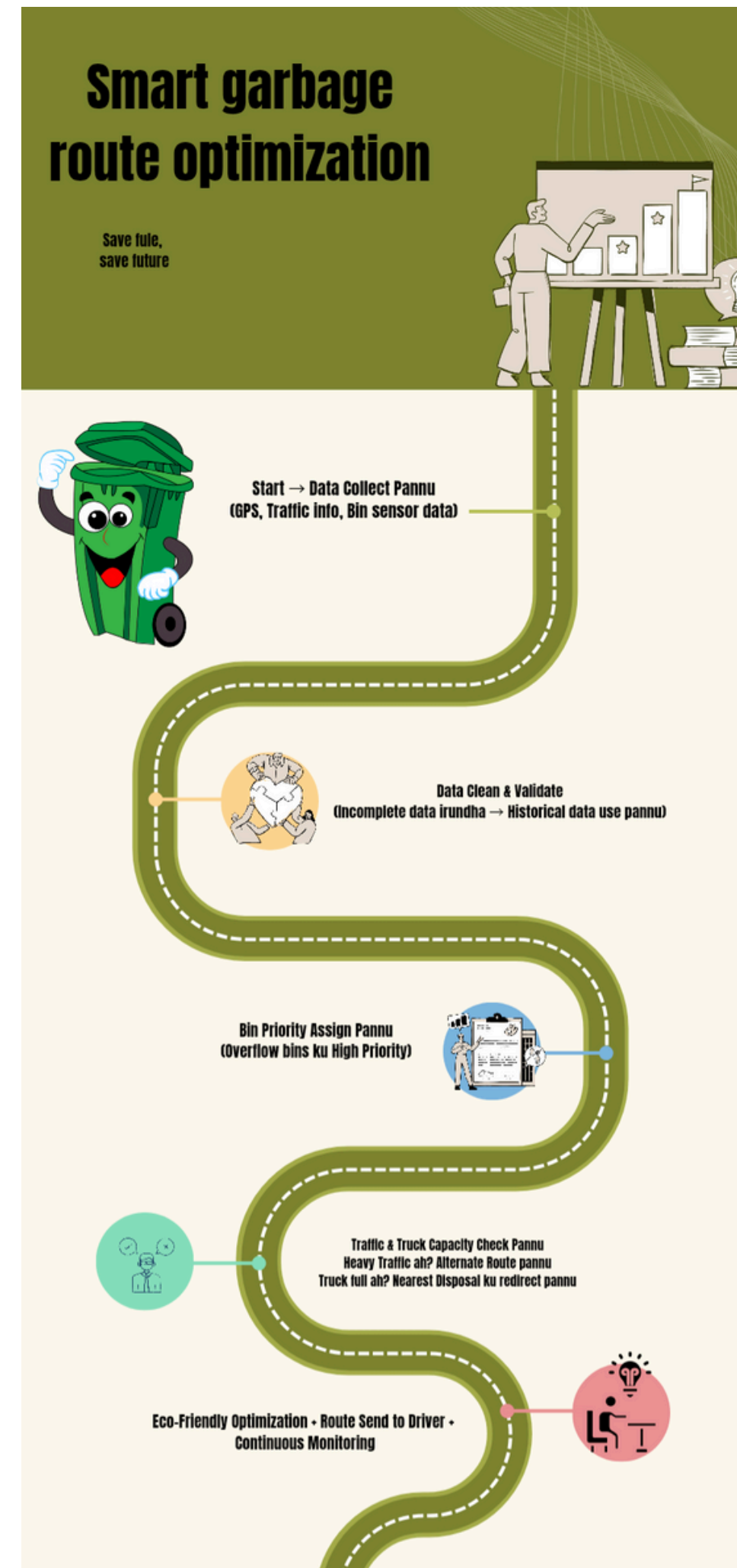Solution: An AI-powered system that analyzes garbage bin locations, traffic conditions, and fuel usage to generate the best route for trucks.

Smart garbage route optimization

Save fule, save future

Start → Data Collect Pannu
(GPS, Traffic info, Bin sensor data)

Data Clean & Validate
(Incomplete data irundha → Historical data use pannu)

Bin Priority Assign Pannu
(Overflow bins ku High Priority)

Traffic & Truck Capacity Check Pannu
Heavy Traffic ah? Alternate Route pannu
Truck full ah? Nearest Disposal ku redirect pannu

Eco-Friendly Optimization • Route Send to Driver • Continuous Monitoring

```python
import networkx as nx

# Create a simple road map
G = nx.Graph()
roads = [(1,2,5), (2,3,2), (1,3,9), (3,4,1), (2,4,6)]
G.add_weighted_edges_from(roads)

start, bins, dump = 1, [2,3], 4  # Truck start, garbage bins, dumping yard

# Find shortest path visiting all bins then dump
path = [start]
for b in bins:
    path += nx.shortest_path(G, path[-1], b, weight="weight")[1:]
path += nx.shortest_path(G, path[-1], dump, weight="weight")[1:]

print("Optimized route:",path)
```

Thank youu🍃🗑️